Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Public Safety and Homeland Security Bureau	)	PS Docket No. 11-60
Seeks Comment on Improving Wireless	)	
Network Resiliency Through Encouraging	)	
Coordination With Power Companies	)	

COMMENTS OF T-MOBILE USA, INC.

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T-Mobile USA, Inc. ("T-Mobile")[1] submits these comments in response to the *Public Notice* in the above-referenced proceeding seeking comment on actions the Public Safety and Homeland Security Bureau ("Bureau"), communications providers, and power companies can cooperatively take to encourage and increase coordination in the power and communications sectors, before, during, and after an emergency or disaster.[2] The *Public Notice* is part of a recent series of inquiries conducted by the Bureau into the efficacy of the Wireless Network Resiliency Cooperative Framework ("Framework").

INTRODUCTION AND SUMMARY

T-Mobile welcomes the Commission's focus on network resiliency and consideration of ways to facilitate a more rapid recovery in the wake of a disaster, and has been an active participant in the Commission's examination of recent events. The record compiled to date in this proceeding discusses in detail the overall benefits of the Framework and its resulting

[1] T-Mobile USA, Inc. is a wholly-owned subsidiary of T-Mobile US, Inc., a publicly traded company.

[2] Public Safety and Homeland Security Bureau Seeks Comment on Improving Wireless Network Resiliency Through Encouraging Coordination With Power Companies, DA 19-13 (rel. Jan. 3, 2019) ("*Public Notice*").

success, which can be largely attributed to its premise of flexibility.[3] The Framework, which recognizes that cooperation will be provided when necessary and feasible, has allowed T-Mobile to allocate resources effectively and dynamically to better align with the circumstances of a particular event, thereby improving disaster recovery overall.

For this inquiry, the Bureau seeks to further explore the state of coordination between the communications providers and power companies. Such coordination is important given that the record demonstrates that the loss of commercial power in the wake of natural disasters is a major cause of wireless network outages.[4] T-Mobile thus commends the Bureau for seeking comment on cooperative steps that could be taken to improve coordination between the two sectors, particularly in the aftermath of disasters.

As discussed below, there are a number of ongoing, voluntary efforts to address this important issue. T-Mobile encourages the Commission to promote and further these efforts to improve coordination between the power and communications sectors.

In addition, T-Mobile urges the Commission to refrain from imposing any prescriptive back-up power mandates. Such mandates would artificially direct investments and are

[3] *See* T-Mobile Comments, PS Docket No. 11-60, at 5 (Jul. 16, 2018) ("T-Mobile Framework Comments"); CTIA Comments, PS Docket No. 11-60, at 7-8 (Jul. 16, 2018); AT&T Comments, PS Docket No. 11-60, at 3-5 (Jul. 16, 2018) ("AT&T Framework Comments"); *see also* CTIA Reply Comments, PS Docket No. 11-60 at 3-6 (Jul. 31, 2018); T-Mobile Comments, PS Docket No. 11-60 at 1-21 (Nov. 26, 2018) ("T-Mobile 2018 Hurricane Season Comments"); AT&T Comments, PS Docket No. 11-60 at 1, App. (Nov. 26, 2018); Sprint Comments, PS Docket No. 11-60 at 1-2 (Nov. 26, 2018); Verizon Comments, PS Docket No. 11-60 at 1-2 (Nov. 26, 2018).

[4] *See, e.g.*, T-Mobile 2018 Hurricane Season Comments at 12-13, 17; T-Mobile Framework Comments at 4; AT&T Framework Comments at 6-7; *see also* Comments of T-Mobile, PS Docket No. 17-344 at 4-5, 12-13 (Jan. 22, 2018) ("T-Mobile 2017 Hurricane Season Comments"); Comments of Virgin Islands Telephone Corp. d/b/a Viya, PS Docket No. 17-344 at 11 (Jan. 22, 2018) ("Viya Comments").

inconsistent with the current flexible approach that has proven effective in ensuring highly resilient networks.

I. FLEXIBILITY IS THE KEY TO PROMOTING NETWORK RESILIENCY

T-Mobile shares the Commission's commitment to ensuring highly reliable networks and competes with other wireless carriers on a daily basis to deliver on this promise. As a seasoned competitor in the commercial mobile radio services ("CMRS") marketplace, T-Mobile appreciates that flexibility is key in building solid networks – both for delivering great service and for ensuring wireless service continuity, even during challenging events. Generally, investments to promote resiliency will vary significantly depending upon the network design and requirements. For example, investments can be targeted toward cell sites with significantly overlapping coverage. This approach minimizes the impact on service availability when certain sites become inoperable. Investments also can be made in temporary assets, such as temporary backhaul and generators, which can be deployed in areas where cell sites become inoperable. T-Mobile generally uses a combination of these approaches to ensure a resilient network based on the unique circumstances of an area.

Not only are network investment strategies driven by network design, they will vary by geography with resiliency addressed differently in areas prone to large scale natural disasters versus areas generally not subject to such events. Further, even in areas prone to disasters, the investments will vary depending upon the type of disasters. For example, investments in networks subject to hurricanes often will differ from investments in networks more prone to earthquakes. There simply is no "one-size-fits all" solution to resiliency.

T-Mobile is proactive in its development of a resilient network that can withstand or recover quickly from numerous types of natural disasters, including wildfires, hurricanes, and other storms. Some of these measures include: comprehensive planning around network

hardening; continuously adding capacity to its network to anticipate the future needs of consumers or possible network-impacting events; regular year-round testing of its incident command system; engaging in continuous assessments throughout the year; conducting an annual planning exercise; pre-staging equipment, such as fuel, generators, and antennas; and coordinating with other carriers, vendors and industry partners regarding mutual aid, such as backhaul and roaming support, in advance of potential disasters. As noted above, these network resiliency investments and practices are not uniform and vary by geography and the type of natural disasters likely to impact a region. For example, T-Mobile's on-going deployment of fixed generators is targeted to areas prone to natural disasters likely to produce power outages and is focused on sites that provide overall coverage.

Despite best efforts to ensure network resiliency, occasional temporary outages in wireless networks in the wake of disasters are unavoidable. To minimize such outages, however, T-Mobile has taken several voluntary measures throughout the years, including:

- Committing a significant amount of its financial resources to fortify its network.
- Developing best practices through the Alliance for Telecommunications Industry Solutions Network Reliability Steering Committee, the Network Reliability and Interoperability Council, and the Communications Security, Reliability, and Interoperability Council.
- Working with industry partners to develop and implement the voluntary Framework.

These voluntary efforts generally worked well to ensure that T-Mobile's wireless network is resilient and to facilitate the rapid recovery of those portions of its network damaged during the 2017 and 2018 hurricane seasons. The Commission, through its Disaster Information Reporting System and various Public Notices, collected extensive information regarding the performance of wireless networks in the wake of these hurricanes. This information confirms

that the flexible approach taken by the CMRS industry is effective given that wireless networks performed admirably during the recent, active hurricane seasons.

II. IMPROVING THE FLOW OF INFORMATION FROM POWER COMPANIES WILL FACILITATE EFFORTS TO RESTORE WIRELESS SERVICE IN THE WAKE OF DISASTERS

Although wireless networks generally have performed well in the wake of most natural disasters, they do suffer outages. Where service is not restored quickly, the outages generally are due to the unavailability of commercial power, rather than a failure of wireless infrastructure.[5] As a result, T-Mobile's restoration efforts could be significantly improved if it had better information regarding the plans and timetables for restoring commercial power.[6]

T-Mobile's network resiliency planning includes contingencies for the loss of commercial power. Specifically, T-Mobile has equipped many sites with fixed generators that can temporarily compensate for the loss of commercial power. T-Mobile also has large stores of portable generators that can be moved quickly (along with prepositioned fuel reserves) to provide temporary power and restore wireless service in disaster areas where commercial power is unavailable due to the event. The effectiveness of generator deployment could be significantly improved, however, if T-Mobile knew where power companies planned on restoring service first. Rather than send crews to deploy temporary generators in areas where the power company will be restoring service in a few hours (or a relatively short period of time), the company could deploy these assets in areas where commercial power will be unavailable for longer periods. Without this information, T-Mobile may waste time deploying temporary generators in areas

[5] *See, e.g.*, T-Mobile 2018 Hurricane Season Comments at 12-13, 17; T-Mobile 2017 Hurricane Season Comments at 4-5, 12-13; T-Mobile Framework Comments at 4; AT&T Framework Comments at 6-7; Viya Comments at 11.

[6] *See* T-Mobile Framework Comments at 4; T-Mobile 2017 Hurricane Season Comments at 13.

where power comes back online at the same time, or shortly after, the generators become operational. This problem was particularly acute in Puerto Rico in the aftermath of Hurricanes Irma and Maria.

Based on T-Mobile's experience, direct, on-the-ground coordination with electric companies facilitates the restoration of communications networks. The success of this coordination, which often occurs in collaborative meetings at the state and local levels, was recently demonstrated in the wake of the Camp Wildfires. In responding to that event, T-Mobile's local managers were able to engage with local first responders, utility personnel, and other telecommunications company personnel and exchange real time information. Also, by attending meetings facilitated by local officials and receiving information from the utility and other telecommunications companies, T-Mobile was able to design a dynamic response for its technical teams that was focused and efficient. Among other things, T-Mobile was able to deploy temporary resources in areas subject to longer timelines for the restoration of power. T-Mobile also was able to use this information to prioritize service restoration efforts in areas most beneficial to evacuees and first responders.

Accordingly, as T-Mobile has previously stated,[7] the Commission should examine methods to ensure consistent inclusion of wireless carriers in the information flow from power companies regarding their efforts to restore the power grid in the aftermath of disasters.

III. THE COMMISSION SHOULD CONTINUE ITS INVOLVEMENT IN CROSS-SECTOR COLLABORATION ACTIVITIES

T-Mobile commends the Commission for its work on cross-sector collaboration. As a member of the Department of Homeland Security's Critical Infrastructure Partnership Advisory Council, which includes members from the electricity sector, the Commission should work to

[7] *See* T-Mobile Framework Comments at 4; T-Mobile 2017 Hurricane Season Comments at 13.

develop procedures by which the electricity sector could share timely information related to its restoration efforts.

The Commission also could promote the establishment of such procedures through its participation in DHS's National Coordinating Center for Communications ("NCC"). This centralized government-industry center was established to share information in the wake of major communications-impacting events resulting in the activation of Emergency Support Function ("ESF") #2. The NCC implements the National Response Framework ("NRF") which recognizes the importance of restoring power to the recovery of communications networks. The energy sector also is governed by the NRF and ESF #12, with the Department of Energy ("DOE") having primary responsibility for coordinating recovery efforts. Given that both the energy and communications sectors are governed by the NRF and ESF, T-Mobile encourages the Commission to work through the NCC and with DOE to evaluate ways in which power companies can share information regarding its restoration efforts with communications companies reliant on their services.

IV. THE COMMISSION SHOULD ENCOURAGE ONGOING VOLUNTARY EFFORTS TO IMPROVE THE INFORMATION FLOW BETWEEN THE POWER AND COMMUNICATIONS SECTORS

Although information regarding the service restoration strategies of power companies in the wake of a disaster would facilitate the restoration of wireless networks impacted by the same event, prescriptive requirements are unnecessary at this time. Instead, the Commission should continue to encourage voluntary industry efforts in this area and should direct various voluntary advisory committees to review existing guidance on information sharing and, where needed, develop recommendations for improvements.

To this end, T-Mobile is a member of the Communications Sector Coordinating Council which meets regularly and is charged with developing principles and recommendations for

improving cross-sector coordination in the wake of disasters. Moreover, the Commission recently formed a "Disaster Response and Recovery Working Group" within the Broadband Deployment Advisory Committee to develop proposals for improving coordination among wireless providers, backhaul providers, and power companies during and after a disaster. Recommendations from this working group may inform discussions within the Critical Infrastructure Partnership Advisory Council regarding cross-sector information sharing.

V. RIGID BACK-UP POWER MANDATES ARE NOT AN APPROPRIATE MEASURE FOR BUILDING WIRELESS NETWORK RESILIENCY

The *Public Notice* seeks comment on best practices for the use of back-up power to promote more resilient communications networks.[8] As noted above, back-up power is merely one possible approach to addressing network resiliency.

Wireless carriers must be afforded flexibility to determine the best method for ensuring continuity of service. While back-up power is widely deployed, it is not possible or necessary to deploy it for every cell site. Wireless network design includes both "coverage" sites and "capacity" sites. These sites are designed to work together so that the loss of a capacity site will not result in a loss of wireless coverage. Hardening efforts thus can be effective when focused on coverage sites necessary to provide a blanket of coverage and communications while underlying capacity sites are being recovered to restore full communications capacity. Further, the loss of a coverage site may not have a significant impact on a mature network that has a large number of capacity sites deployed within the footprint of the coverage site. Thus, the need to deploy back-up power at particular sites will vary significantly based on network design. The wireless carrier that designs the network is in the best position to allocate resources accordingly.

[8] *Public Notice* at 5.

Wireless carrier resources are not unlimited. Investments must be balanced carefully, and restrictive back-up power regulatory requirements will unnecessarily skew investment and may not be implementable due to regulatory restrictions and siting limitations.[9] For example, many T-Mobile sites are located in places with very little space for back-up power, such as in church steeples or on poles. Federal and local rules also create specific space challenges for the use of generators, including Occupational Safety and Health Administration requirements that mandate a 10-foot-radius clearance between the liquid propane fuel tank and its ignition source – a separation distance not possible at many sites. Because back-up power is widely deployed based on local conditions and network needs, implementing a one-size fits all requirement is likely to force deployment of costly and unnecessary solutions that will drain resources that could be invested in new cell sites to expand coverage or improve capacity. In light of the forgoing, rigid back-up power requirements certainly should not be mandated.

Rigid back-up power requirements also will not necessarily improve network reliability. To the contrary, rigid mandates may require finite resources to be expended on back-up power at a site that has little chance of being affected by a natural disaster. Rather than make such investments, limited resources may be used more efficiently by investing in redundant geographic coverage and/or purchasing portable generators that can be quickly deployed to restore power to specific sites actually requiring alternative power.

Finally, pursuant to Executive Order 12866, agencies must "assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating" before adopting new regulations.[10] In particular, agencies must "propose or adopt a regulation only upon a

[9] *See generally* T-Mobile Comments in Support of Petition for Reconsideration, EB Docket No. 06-119, at 9-16 (Sept. 4, 2007).

[10] Exec. Order No. 12866, 58 Fed. Reg. 51735, 51735 (Oct. 4, 1993).

reasoned determination that the benefits of the intended regulation justify its costs."[11] Given the proven need for flexibility, the obstacles to back-up power deployment at many sites, and the success of the voluntary Framework in improving network reliability, the imposition of a prescriptive back-up power requirement would be inconsistent with this mandate because it would require massive expenditures with unproven benefits.

CONCLUSION

As discussed above, T-Mobile lauds the Commission's focus on network resiliency and consideration of ways to facilitate a more rapid recovery in the event of a disaster. The record compiled to date in this proceeding demonstrates that the Framework has been extremely successful due to its flexibility. The record also demonstrates, however, that the loss of commercial power is a major cause of wireless network outages in the wake of natural disasters. T-Mobile supports efforts to improve coordination between the communications and power sectors in the aftermath of disasters. Finally, T-Mobile urges the Commission to refrain from imposing any prescriptive back-up power mandates.

Respectfully submitted,

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[11] *Id*. at 51736. These requirements were extended to independent agencies through adoption of Executive Order 13563. Exec. Order No. 13563, 76 Fed. Reg. 3821, 3821 (Jan. 21, 2011).